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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,844	10/29/2003	Raphael Duval	PET-1802 D2	2492
23599 7590 03/19/2008 MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201				
EXAMINER				
HENRY, MICHAEL C				
ART UNIT		PAPER NUMBER		
1623				
MAIL DATE		DELIVERY MODE		
03/19/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/694,844

**Applicant(s)**

DUVAL, RAPHAEL

**Examiner**

MICHAEL C. HENRY

**Art Unit**

1623

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10/25/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-5, 13, 15 and 18 is/are rejected.
- 7) ☒ Claim(s) 16, 17, 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date 01/03/08
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

The following office action is a responsive to the Amendment filed, 10/25/07.

The amendment filed 10/25/07 affects the application, 10/694844 as follows:

1. Claims 2 and 13 have been amended. Claims 1, 6-12 and 14 are withdrawn.
2. The responsive to applicants' arguments is contained herein below.

Claims 1-19 are pending in the application

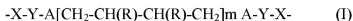
#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-5, 13, 15, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giuliana et al. (US 3,501,260) in combination with Francotte (WO 97/49733).

In claim 2, applicant claims a support material consisting essentially of a cross-linked polymer compound in a three-dimensional network, comprising a radical of general formula (I) or (II):



where X represents an oxygen atom or the group -NH, m is an integer other than zero equal at most to 5, R represents a hydrogen atom or a substituted or non-substituted, linear or

branched alkyl radical having from 1 to 8 carbon atoms, Y represents a single bond, -NH-CO-group, -NH-CS group or -CO-group, A represents a single bond, a linear or branched alkylene radical having from 1 to 21 carbon atoms, an arylene radical having from 6 to 18 carbon atoms or an aralkylene radical having from 7 to 40 carbon atoms, L represents a bis-thioether radical, of general formula (IIIa), bis-sulphoxide radical of general formula (IIIb), or bis-sulphone radical, of general formula (IIIc), or a bis-silane radical of general formula (IV), below: ..... Claims 3-5 are drawn to said support material wherein the support material is of specific form or shape, specific % or wherein the support material obtained from specific source. Claim 13 is drawn to a percolation membrane comprising a cross-linked polymer compound in a three-dimensional network, comprising a radical of general formula (I) or (II).

Giuliana et al. teach cross-linked polymer compound comprising a radical of general formula (II), comprising beta-oxyethyl sulfone(s) and a process for preparing them (see abstract; see col. 1, line 72 to col. 4, line 10, especially col. 3, lines 49-57). Giuliana et al. 's radical is the same as applicant's radical of general formula (II) wherein X represents an oxygen atom, m is an integer = 1, L represents a bis-sulphone radical, of general formula (IIIc) wherein  $W_1$  and  $W_3$  each represent an alkylene radical,  $W_2$  represents a single bond, Y represents a single bond and A represents a single bond (see abstract; see col. 1, line 72 to col. 4, line 10, especially col. 3, lines 49-57). Furthermore, Giuliana et al. discloses that the said cross-linked polymer compound can be formed from soluble polymers containing a plurality of free hydroxyl groups per polymeric molecule with certain polyfunctional compounds and products produced thereby (see col. 1, lines 23-47). Also, Giuliana et al. disclose that examples of the soluble polymers include, but are not limited to polyvinyl alcohol, starch and keratins, and the like (see col. 1, lines 23-47). In

addition, Giuliana et al. disclose that the sulfone ethers polymers have valuable and highly desirable properties which render them useful in textile and other arts (see col. 1, lines 23-47).

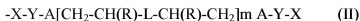
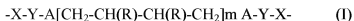
Giuliana et al. does not expressly recite a specific compound, but suggests a compound that reads on the claimed invention.

Francotte discloses that crosslinked polysaccharides (polymers) derivatives can be used as support materials for chromatographic separation of enantiomers (see abstract) and that in conditioned form, they can be used as pure polymers the for chromatographic separation of enantiomers (see abstract).

It would have been obvious to one having ordinary skill in the art, at the time the claimed invention was made, in view of Giuliana et al. and Francotte, to have prepared any compound suggested by Giuliana et al., in order to use them as support materials for chromatographic separation of enantiomers.

One having ordinary skill in the art would have been motivated, in view of Giuliana et al. and Francotte, to prepare any compound suggested by Giuliana et al., in order to use them as support materials for chromatographic separation of enantiomers. It should be noted that the use of support material in specific form or shape, specific % or specific source (as recited in claims 3-5) depends on the factors such as the type of chromatography separation technique used.

In claim 13, applicant claims a percolation membrane comprising a cross-linked polymer compound in a three-dimensional network, comprising a radical of general formula (I) or (II):



where X represents an oxygen atom or the group -NH, m is an integer other than zero equal at most to 5, R represents a hydrogen atom or a substituted or non-substituted, linear or branched alkyl radical having from 1 to 8 carbon atoms, Y represents a single bond, -NH-CO-group, -NH-CS group or -CO-group, A represents a single bond, a linear or branched alkylene radical having from 1 to 21 carbon atoms, an arylene radical having from 6 to 18 carbon atoms or an aralkylene radical having from 7 to 40 carbon atoms, L represents a bis-thioether radical, of general formula (IIla), bis-sulphoxide radical of general formula (IIlb), or bis-sulphone radical, of general formula (IIlc), or a bis-silane radical of general formula (IV), below: .....

Giuliana et al. teach cross-linked polymer compound comprising a radical of general formula (II), comprising beta-oxyethyl sulfone(s) and a process for preparing them (see abstract; see col. 1, line 72 to col. 4, line 10, especially col. 3, lines 49-57). Giuliana et al. 's radical is the same as applicant's radical of general formula (II) wherein X represents an oxygen atom, m is an integer = 1, L represents a bis-sulphone radical, of general formula (IIlc) wherein  $W_1$  and  $W_3$  each represent an alkylene radical,  $W_2$  represents a single bond, Y represents a single bond and A represents a single bond (see abstract; see col. 1, line 72 to col. 4, line 10, especially col. 3, lines 49-57). Furthermore, Giuliana et al. discloses that the said cross-linked polymer compound can be formed from soluble polymers containing a plurality of free hydroxyl groups per polymeric molecule with certain polyfunctional compounds and products produced thereby (see col. 1, lines 23-47). Also, Giuliana et al. disclose that examples of the soluble polymers include, but are not limited to polyvinyl alcohol, starch and keratins, and the like (see col. 1, lines 23-47). In addition, Giuliana et al. disclose that the sulfone ethers polymers have valuable and highly desirable properties which render them useful in textile and other arts (see col. 1, lines 23-47).

Giuliana et al. fails to recite a specific compound, but suggests a compound that reads on the claimed invention.

Francotte discloses that crosslinked polysaccharides (polymers) derivatives can be used as support materials for chromatographic separation of enantiomers (see abstract) and that in conditioned form, they can be used as pure polymers the for chromatographic separation of enantiomers (see abstract).

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One having ordinary skill in the art would have been motivated, in view of Giuliana et al. and Francotte, to prepare any compound suggested by Giuliana et al., in order to use them as support materials for chromatographic separation of enantiomers. It should be noted that the use of support material in specific form or shape, specific % or specific source (as recited in claims 3-5) depends on the factors such as the type of chromatography separation technique used. Furthermore, it should be noted that the use of cross-linked polymer compounds in the form of membranes (as recited in claim 13) also depends on factors such as the type of chromatography separation technique used.

In claim 15, applicant disclose a support material according to claim 2, wherein the radical of general formulae (I) or (II) is bound to at least one osidic chiral unit of a linear, branched or cyclic linkage of a polysaccharide or oligosaccharide derivative according to the general

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formulae (VII) and (VIII): ..... Claim 18 is drawn to a support material according to claim 2, wherein L corresponds to formula (IIIc).

Giuliana et al. teach cross-linked polymer compound comprising a radical of general formula (VIII), comprising beta-oxyethyl sulfone(s) and a process for preparing them (see abstract; see col. 1, line 72 to col. 4, line 10, especially col. 3, lines 49-57). Giuliana et al. 's radical is the same as applicant's radical of general formula (II) wherein X represents an oxygen atom, m is an integer = 1, L represents a bis-sulphone radical, of general formula (IIIc) wherein  $W_1$  and  $W_3$  each represent an alkylene radical,  $W_2$  represents a single bond, Y represents a single bond and A represents a single bond (see abstract; see col. 1, line 72 to col. 4, line 10, especially col. 3, lines 49-57). Furthermore, Giuliana et al. discloses that the said cross-linked polymer compound can be formed from soluble polymers containing a plurality of free hydroxyl groups per polymeric molecule with certain polyfunctional compounds and products produced thereby (see col. 1, lines 23-47). Also, Giuliana et al. disclose that examples of the soluble polymers include, but are not limited to polyvinyl alcohol, starch and keratins, and the like (see col. 1, lines 23-47). In addition, Giuliana et al. disclose that the sulfone ethers polymers have valuable and highly desirable properties which render them useful in textile and other arts (see col. 1, lines 23-47).

Giuliana et al. fails to recite a specific compound, but suggests a compound that reads on the claimed invention.

Francotte discloses that crosslinked polysaccharides (polymers) derivatives can be used as support materials for chromatographic separation of enantiomers (see abstract) and that in conditioned form, they can be used as pure polymers for chromatographic separation of enantiomers (see abstract).



It would have been obvious to one having ordinary skill in the art, at the time the claimed invention was made, in view of Giuliana et al. and Francotte, to have prepared any compound suggested by Giuliana et al., in order to use them as support materials for chromatographic separation of enantiomers.

One having ordinary skill in the art would have been motivated, in view of Giuliana et al. and Francotte, to prepare any compound suggested by Giuliana et al., in order to use them as support materials for chromatographic separation of enantiomers. It should be noted that the use of support material in specific form or shape, specific % or specific source (as recited in claims 3-5) depends on the factors such as the type of chromatography separation technique used. Furthermore, it should be noted that the use of cross-linked polymer compounds in the form of membranes (as recited in claim 13) also depends on factors such as the type of chromatography separation technique used. Claims 16, 17 and 19 are objected to as being dependent upon a rejected base claim.

### ***Response to Arguments***

Applicant's arguments with respect to claims 2-5, 13, 15-19 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Henry whose telephone number is 571-272-0652. The examiner can normally be reached on 8.30am-5pm; Mon-Fri. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be

reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael C. Henry

/Shaojia Anna Jiang/  
Supervisory Patent Examiner, Art Unit 1623  
March 3, 2008.

\_\_\_\_\_  
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